

SONY®

VAIO® Computer System Reference Manual



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Updates and additions to software may require an additional charge. Subscriptions to online service providers may require a fee and credit card information. Financial services may require prior arrangements with participating financial institutions.

Important information for Canadian customers:

Your new VAIO computer includes certain software versions or upgrades, and Internet services or offers that are available to U.S. customers only.

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Owner's Record

The model number and serial number are located on the lower front panel of your Sony VAIO® computer. Record the model and serial number in the space provided here, and keep in a secure location. Refer to the model and serial numbers when you call your Sony Service Center.

Model Number:	
Serial Number:	

Safety Information and Caution

Your computer's installed optical drives may vary, depending on the system configuration you have purchased. See the online specification sheet for details on your installed optical drives.

For questions regarding your product or for the Sony Service Center nearest you, visit the Sony Computing Support Web site at <http://www.sony.com/pcsupport>.

DVD-RW Laser Diode Properties

Laser Output	29 mW (DVD-Write)	59 mW (CD-Write)
	1.0 mW (DVD-Read)	1.5 mW (CD-Read)
Wave Length	650-660 nm (DVD)	779-789 nm (CD)

DVD-ROM Laser Diode Properties

Laser Output	0.7 mW (DVD-Read)	0.4 mW (CD-Read)
Wave Length	640-660 nm (DVD)	770-810 nm (CD)

CD-RW Laser Diode Properties

Laser Output	59.4 mW (CD-Write) 1.5 mW (CD-Read)
Wave Length	780-784 nm (CD)

CD-ROM Laser Diode Properties

Laser Output	1.0 mW (CD-Read)
Wave Length	760-810 nm (CD)

- ❑ To prevent fire or shock hazard, do not expose your desktop to rain or moisture. To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.
- ❑ Never install modem or telephone wiring during a lightning storm.
- ❑ Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- ❑ Never touch uninsulated telephone wire or terminals unless the telephone line has been disconnected at the network interface.
- ❑ Use caution when installing or modifying telephone lines.
- ❑ Avoid using the modem during an electrical storm.
- ❑ Do not use the modem or a telephone to report a gas leak in the vicinity of the leak.
- ❑ The socket outlet shall be installed near the equipment and shall be easily accessible.

! To change the backup battery, please contact your nearest Sony Service Center.

! Caution: The use of optical instruments with this product will increase eye hazard. As the laser beam used in this product is harmful to the eyes, do not attempt to disassemble the drive cabinet. Refer servicing to qualified personnel only.

! Danger: Visible and invisible laser radiation when open. Avoid direct exposure to beam.

! For DVD-RW: Danger—Visible and invisible laser radiation when open. Avoid direct exposure to beam.

! For CD-RW/CD-ROM: Danger—Invisible laser radiation when open. Avoid direct exposure to beam.

! Caution: For ADSL and V.90 modem models; to reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.

- ❑ Pour prévenir tout risque d'incendie ou d'électrocution, garder cet appareil à l'abri de la pluie et de l'humidité.
- ❑ Pour prévenir tout risque d'électrocution, ne pas ouvrir le châssis de cet appareil et ne confier son entretien qu'à une personne qualifiée.
- ❑ Ne jamais effectuer l'installation de fil modem ou téléphone durant un orage électrique.
- ❑ Ne jamais effectuer l'installation d'une prise téléphonique dans un endroit mouillé à moins que la prise soit conçue à cet effet.
- ❑ Ne jamais toucher un fil téléphonique à découvert ou un terminal à moins que la ligne téléphonique n'ait été débranché de l'interface réseau.
- ❑ Soyez très prudent lorsque vous installez ou modifiez les lignes téléphoniques.
- ❑ Évitez d'utiliser le modem durant un orage électrique.
- ❑ N'utilisez pas le modem ni le téléphone pour prévenir d'une fuite de gaz vous êtes près de la fuite.
- ❑ L'appareil doit être le plus près possible d'une prise murale pour en faciliter l'accès.

! Pour changer la pile de recharge, veuillez contacter votre centre de service Sony le plus près.

! Avertissement: L'utilisation d'instruments optiques avec ce produit augmente les risques pour les yeux. Puisque le faisceau laser utilisé dans ce produit est dommageable pour les yeux, ne tentez pas de désassembler le boîtier. Adressez-vous à un agent de service qualifié.

! Danger: Radiation laser visible et invisible si ouvert. Évitez l'exposition directe au faisceau.

! Pour les DVD-RW: Danger—Radiation laser visible et invisible si ouvert. Évitez l'exposition directe au faisceau.

! Pour les CD-RW/CD-ROM: Danger—Radiation laser invisible si ouvert. Évitez l'exposition directe au faisceau.

! Attention: Pour ADSL et V.90 mode de modem; afin de réduire les risques d'incendie, n'utilisez qu'un cordon de communication N0. 26 AWG ou plus gros.

Regulatory Information

Declaration of Conformity

Trade Name: SONY

Model No.: PCV-2200/2210

Responsible Party: Sony Electronics Inc.

Address: 680 Kinderkamack Rd
Oradell, NJ 07649

Telephone: 201-930-6972

This phone number is for FCC-related matters only.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ☐ Reorient or relocate the receiving antenna.
- ☐ Increase the separation between the equipment and the receiver.
- ☐ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ☐ Consult the dealer or an experienced radio/TV technician for help.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Only peripherals (computer input/output devices, terminals, printers, etc.) that comply with FCC Class B limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and television reception.

All cables used to connect peripherals must be shielded and grounded. Operation with cables, connected to peripherals, that are not shielded and grounded, may result in interference to radio and television reception.

FCC Part 68

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the modem card is a label that contains, among other information, a product identifier in the format US:AAEQ##TXXXX. If requested, this number must be provided to the telephone company.

This modem uses the USOC RJ-11 telephone jack.

A telephone plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. The REN is used to determine the quantity of devices which may be connected to the telephone line.

Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the telephone company. For products approved after July 23, 2001, the REN for this product is part of the product identifier that has the format US:AAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g. 03 is a REN of 0.3). For earlier products, the REN is separately shown on the label.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operations of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.

If trouble is experienced with this equipment, for repair or warranty information, please contact the Sony Customer Information Service Center at 1-888-4-SONY-PC (1-888-476-6972), or write to the Sony Customer Information Center, 12451 Gateway Blvd., Fort Myers, FL 33913, or find Sony Customer Service on the Web at <http://www.sony.com/pcsupport>. If this equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment from the network until the problem is resolved.

Repair of this equipment should be made only by a Sony Service Center or Sony authorized agent. For the Sony Service Center nearest you, call 1-888-4-SONY-PC (1-888-476-6972), or visit the Sony Computing Web site at <http://www.sony.com/pcsupport>.

Connection to Party Line Service is subject to state tariffs. Contact the state public utility commission, public service commission, or corporation commission for information.

If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of this equipment does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

Please use a surge arrester against electrical surges.

Telephone Consumer Protection Act of 1991 (United States)

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device, including FAX machines, to send any message unless such message clearly contains, in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business, other entity, or individual sending the message, and the telephone number of the sending machine or such business, other entity, or individual. (The telephone number provided may not be a 900 number or any other number for which charges exceed local or long distance transmission charges.)

In order to program this information into your facsimile machine, see your fax software documentation.

Telephone Consumer Guidelines (Canada)

Please refer to your telephone directory under 'Privacy Issues' and/or 'Terms of Service.' For more detailed information, please contact:

CRTC

Terrasses de la Chaudière
Tour centrale 1 promenade du Portage
5 étage Hull PQ K1A 0N2.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Disposal of Lithium Battery

You can return your unwanted lithium batteries to your nearest Sony Service Center or Factory Service Center.

 In some areas, the disposal of lithium batteries in household or business trash may be prohibited.

For the location of the Sony Service Center nearest you, visit the Sony Computing Support Web site at <http://www.sony.com/pcsupport>.

- ! **Do not handle damaged or leaking lithium batteries.**
- ! **Ne pas manipuler les batteries au lithium qui fuient ou sont endommagées.**

! **Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.**

! **Une batterie non conforme présente un danger d'explosion. La remplacer seulement par une batterie identique ou de type équivalent recommandé par le fabricant. Évacuer les batteries usées selon les directives du fabricant.**

! **The battery pack used in this device may present a fire or chemical burn hazard if mistreated. Do not disassemble, heat above 212°F (100°C), or incinerate. Dispose of used battery promptly. Keep away from children.**

La manutention incorrecte du module de batterie de cet appareil présente un risque d'incendie ou de brûlures chimiques. Ne pas démonter, incinérer ou exposer à une température de plus de 100°C. Évacuer promptement la batterie usée. Garder hors de portée des enfants.

Industry Canada Notice

This equipment meets the applicable Industry Canada technical specifications.

The Ringer Equivalence Number (REN) is an indication of the maximum number of devices allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the RENs of all the devices does not exceed 5.

Avis de l'Industrie Canada

Le présent matériel est conforme aux spécifications techniques applicables d'Industrie Canada.

L'indice d'équivalence de la sonnerie (IES) sert à indiquer le nombre maximal de terminaux qui peuvent être raccordés à une interface téléphonique. La terminaison d'une interface peut consister en une combinaison quelconque de dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

Contents

NOTICE	ii
Owner's Record	iii
Safety Information and Caution	iv
Regulatory Information.....	vii
FCC Part 68	viii
Telephone Consumer Protection Act of 1991 (United States)	ix
Telephone Consumer Guidelines (Canada).....	ix
Disposal of Lithium Battery	x
Industry Canada Notice	xi
Avis de l'Industrie Canada	xi

Chapter 1 — Identifying Components..... 1

Front View	2
Drives	3
Buttons and Switches	4
Indicators.....	5
Connectors	6
Rear View	7
Icon Labels	8
I/O Connectors	10
Expansion Slots	14

Chapter 2 — Configuring Your System 15

Accessing the BIOS Setup Utility	16
Changing Power Management Settings	17

Chapter 3 — Upgrading and Maintaining Components	23
Removing the Cover	24
Removing the cover	24
Replacing the cover	25
Installing an Add-on Card	27
Installing an add-on card	27
About the Lithium Battery	30
Replacing the lithium battery	30
About Installing Memory	32
Removing a memory module	32
Installing a memory module	33
Installing Memory Modules	35
Covering an Open I/O Slot	38
About Hard Disk Drive Installation	39
Replacing the original hard disk drive	39
Installing an additional hard disk drive	40
Identifying the additional hard disk space	42
Removing the Power Supply	44
Replacing the Power Supply	45
Chapter 4 — System Board	47
Memory Module (DDR-DIMM) Slots	48
Power Supply Header	49
CLR CMOS Jumper	50
Chapter 5 — CMOS Setup Options	51
Main Screen	53
Advanced Screen	55
Power Screen	56
Boot Screen	57
Exit Screen	58

<i>Chapter 6 — Miscellaneous Technical Information</i>	<i>59</i>
User and Supervisor Passwords	60
Beep Code Error Messages	61
PCI Configuration Status and Error Messages	62
DMA Channel Assignments	63
System I/O Address Map	64
Memory Map	66
IRQ Settings	67
 <i>Chapter 7 — Specifications.....</i>	 <i>69</i>
Processor	69
Chipset	69
PCI Bus	69
Memory Modules	70
Memory Configurations	70
L2 Cache	70
Graphics	70
Audio	71
Communications	71
I/O and Expansion Slots	72
Floppy Disk Drive and Controller	72
Hard Drives and Controller	72
Optical Drives	73
System BIOS	73
 <i>Index</i>	 <i>75</i>

Chapter 1

Identifying Components

The following sections identify and describe each component that is visible from the exterior of the VAIO® computer. Your computer's components may vary, based on the model and features you purchased. For details on the hardware configuration of your system, see the online specifications sheet.

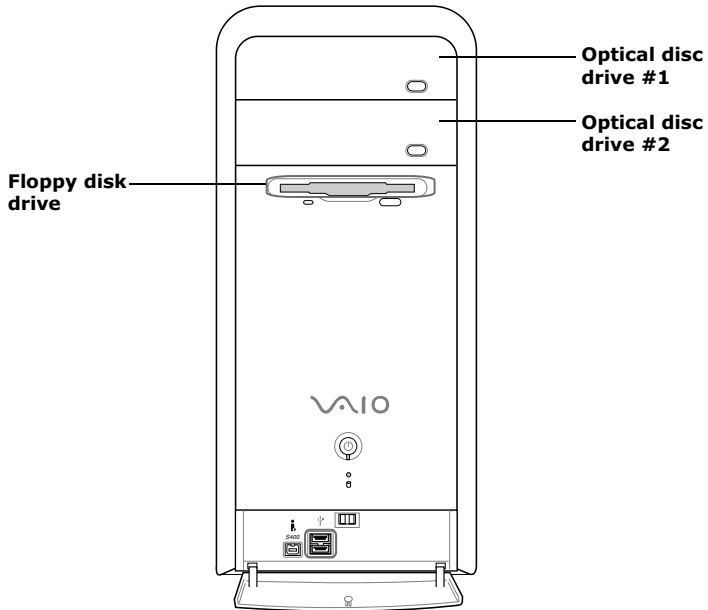
To view this the online specifications sheet:

- 1 Click **Start** in the Windows taskbar, then click **Help and Support**.
- 2 From the **VAIO Help and Support** menu, click **VAIO User Guide**.
- 3 Locate the link in the text, "View the **VAIO® Computer Specifications** which lists your computer's hardware configuration and preinstalled software information."

Front View

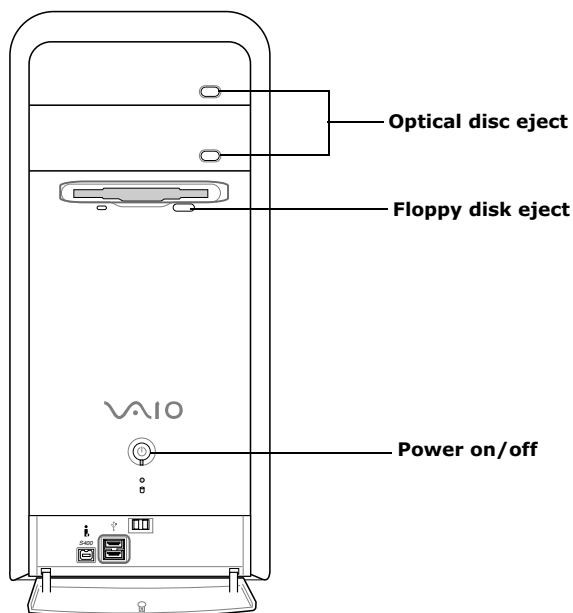


Drives



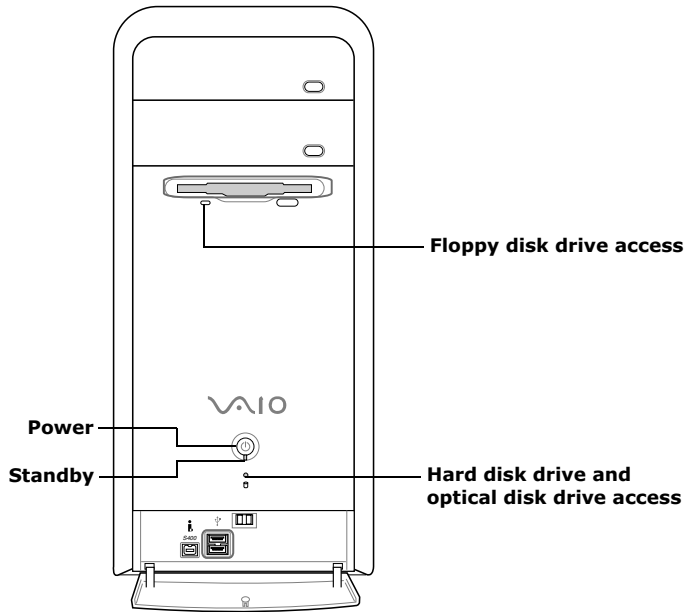
Drive	Description
Optical disc drive #1	See online specifications sheet for details.
Optical disc drive #2	See online specifications sheet for details.
Floppy disk drive	3.5-inch, 1.44 MB.

Buttons and Switches



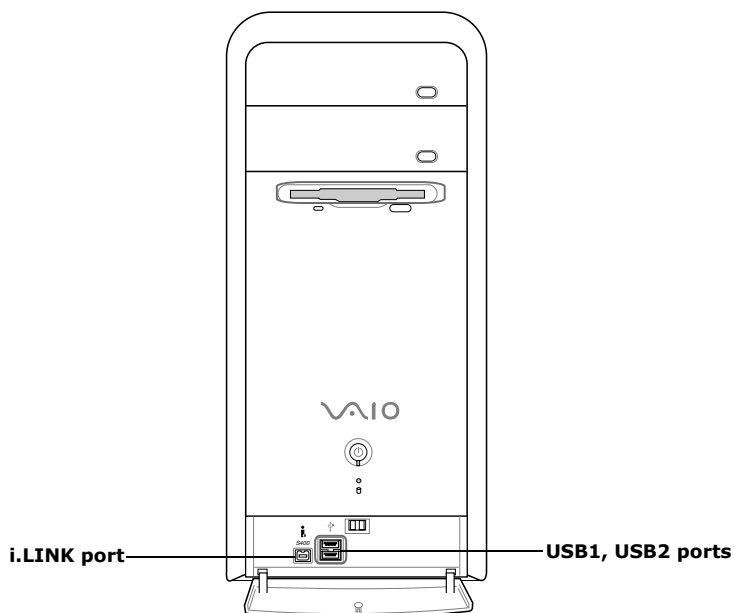
Button or switch	Description
Optical disc eject button	Automatically opens and closes the assigned optical drive tray.
Floppy disk eject button	Ejects a floppy disk.
Power on/off switch	Turns system power on, off, or into Standby mode.

Indicators



Indicator	Description
Floppy disk drive access indicator	Light is green while reading and writing data from and to a floppy disk.
Hard disk drive and optical disc drive access indicators	Light is amber while reading and writing data.
Power indicator (VAIO)	Light is blue when the computer is on. The light turns off when the computer is in Standby mode or turned off.
Standby indicator	Light is amber when the computer is in Standby mode.

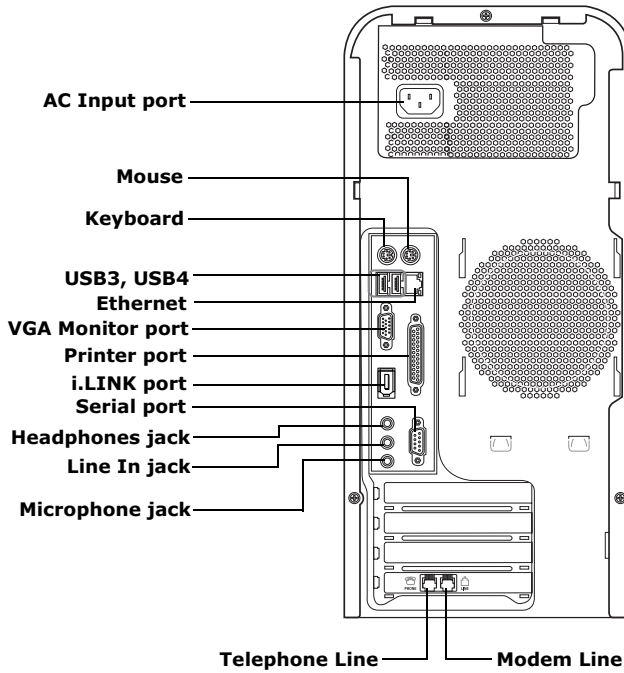
Connectors



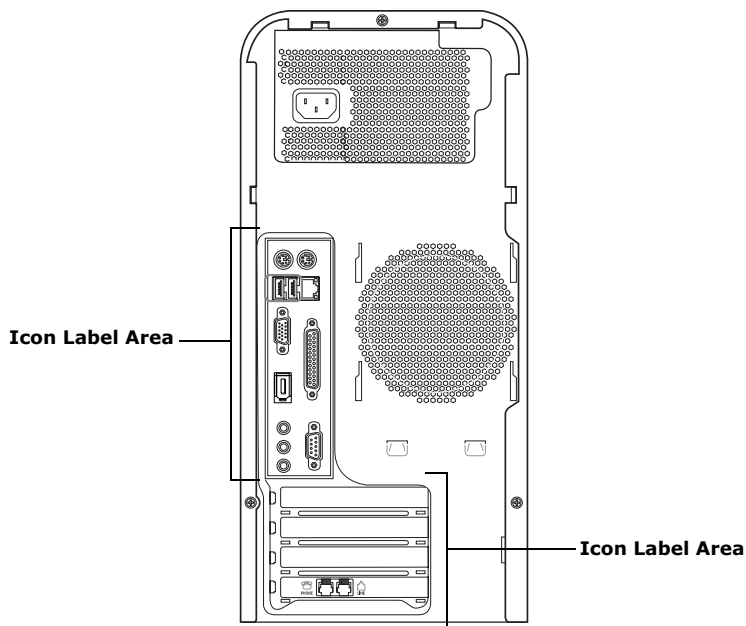
Connector	Description
i.LINK® S400 port (IEEE 1394)*	Connects to a digital device that has a 4-pin i.LINK connector.
USB1, USB2 ports	Connections for compatible high/full/low-speed USB devices.

- * To connect to a 6-pin i.LINK device, use the i.LINK port on the back of the system. A 6-pin i.LINK cable can supply power from the computer to the device if the device also has a 6-pin i.LINK port. A 4-pin i.LINK cable cannot supply power to the device.

Rear View



Icon Labels



Icon	Description
	Mouse port
	Keyboard port
	VGA Monitor port
	Printer port
	i.LINK® S400 (IEEE 1394) port

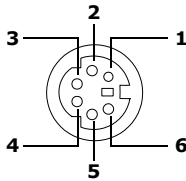
<i>Icon</i>	<i>Description</i>
	Ethernet port (for LAN connection only)
	Universal Serial Bus (USB 2.0) port
	Microphone jack
	Headphones jack
	Line In jack (audio)
	Telephone jack
	Modem line jack

I/O Connectors

The following section identifies the various I/O connectors.

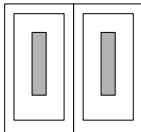
Keyboard and Mouse Ports

The keyboard and mouse ports are physically identical and have the same pinout. They are standard 6-pin PS/2® compatible female ports.



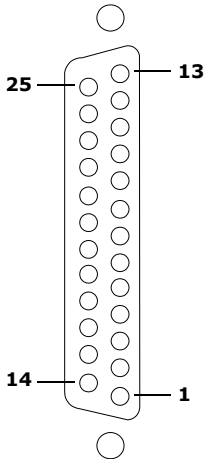
USB Ports

The USB ports are 4-pin USB 2.0 ports. Two USB ports are located at the front, and two at the rear of the system. USB 2.0 technology supports compatible high/full/low-speed USB devices.



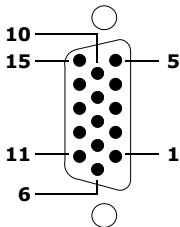
Printer Port

The printer port is a standard 25-pin DB-25 female port.



VGA Monitor Port

The monitor port is a standard 15-pin female high-density VGA-type port.



Microphone, Headphones, and Line In Jacks

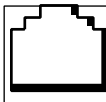
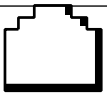
The microphone, headphones, and line in jacks are physically identical, but have different connections. They are standard 3.5 mm stereo mini-jacks.

Microphone**Headphones****Line In**

Connector	Description
Microphone	Electret condenser microphone input.
Headphones	1.0 Vrms (typical).
Line In	1.0 Vrms (typical), 10 Kohm impedance.

Telephone and Modem Line Jacks

The telephone and modem line jacks are physically identical and have identical connections. They are standard RJ-11 female phone jacks. However, the modem line jack is for connecting a telephone line that comes from the wall to the computer, and the telephone jack is for connecting the telephone to a computer.

**Telephone
Line****Modem
Line**

i.LINK S400 (IEEE 1394) Ports

The 6-pin i.LINK® port on the back panel of the system can supply power from the computer to an i.LINK device if the device also has a 6-pin i.LINK port. The 6-pin port supplies 10 V to 12 V and a maximum power of 6 watts.

 i.LINK is a trademark of Sony used only to designate that a product contains an IEEE 1394 connection. The i.LINK connection may vary, depending on the software applications, operating system and compatible i.LINK devices. All products with an i.LINK connection may not communicate with each other.

Refer to the documentation that came with your compatible i.LINK device for information on operating conditions and proper connections. Before connecting compatible i.LINK devices to your system, such as an optical disk or hard disk drive, confirm their operating system compatibility and required operating conditions.

The 4-pin i.LINK port at the bottom of the front panel does not supply power to an i.LINK device.

**6-pin i.LINK port
(IEEE 1394)**



**On back of
system**

**4-pin i.LINK port
(IEEE 1394)**



**Behind lower
front panel**

Ethernet Port

The Ethernet port on the back panel of the system is used to connect to a 10BASE-T/100BASE-TX Ethernet network.

Ethernet

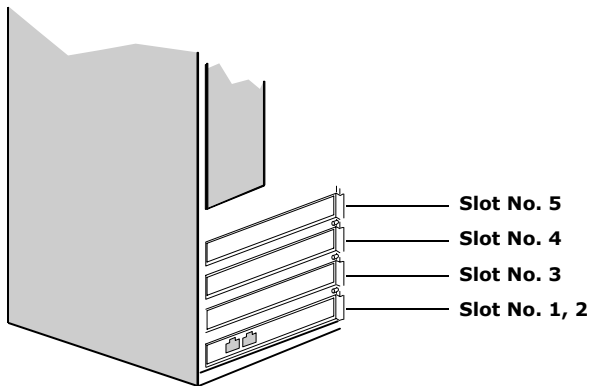


**On back of
system**

Expansion Slots

There are five expansion slots; however, four slot covers are visible from the back panel (see “System Board” on page 47).

<i>Expansion Slot No.</i>	<i>Description</i>
5	Not available for expansion.
4	Available for expansion.
3	Available for expansion.
2	Available for expansion when the CNR slot is not occupied. Only one slot can be occupied at a time.
1	Occupied by a fax/modem card. The V.90 compatible modem has two RJ-11 jacks (Telephone and Line).



Chapter 2

Configuring Your System

This chapter contains information on configuring your system.

- ❑ Making changes to the BIOS settings.
- ❑ Making changes to the display's power management settings.

Accessing the BIOS Setup Utility

Access the BIOS Setup Utility to make changes to the BIOS settings (see “CMOS Setup Options” on page 51 for information on BIOS settings).

! Before rebooting the system, save and close all open files, and exit open applications.

- 1 Reboot your computer by selecting **Shut Down...** from the Start menu, then select **Restart**.
- 2 When the Sony logo appears, press F2.
- 3 The AwardBIOS Setup Utility screen appears.

Each menu presents options for modifying the system configuration. Use the left and right arrow keys to select a menu from the menu bar. Use the up and down arrow keys to select items within a menu. Once an item is highlighted, use the plus/minus (+/-) keys to modify a setting.

If an item has a triangle (▶) to its left, this indicates that a sub-menu of options is available. Press ENTER to access a sub-menu. If a sub-menu contains items with a triangle, there is another layer of options from which to select.

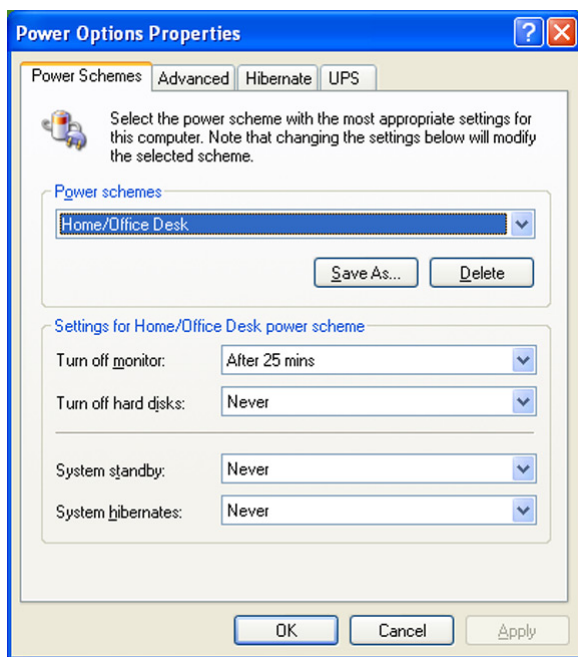
- 4 Once you select an option, press ESC to back out of each menu until you reach the top level, where the menu bar appears.
- 5 To exit the BIOS setup utility, press ESC from any top-level screen and follow the prompts.

Changing Power Management Settings

Power Management capability is designed to enable your computer to reduce power or shut itself off after being idle for a specified period of time.

- 1 From the **Start** menu, point to **Settings, Control Panel**, then click **Power Options**.

The Power Options Properties dialog box opens, with the Power Schemes tab displayed.



- 2 Select the power scheme that is most appropriate for the way you use your computer.

To change a power scheme, change the settings for Turn off monitor, Turn off hard disks, System stand by, and System hibernates.

The Turn off monitor option enables you to specify the period of inactivity (in minutes) that you want to elapse before your monitor turns off when your computer is running on AC power. The display reactivates when you move the mouse or press a key.

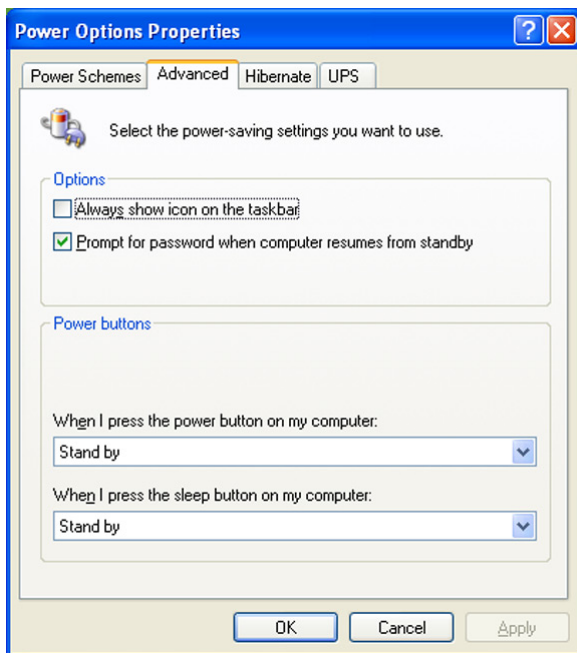
The Turn off hard disks option enables you to specify the period of inactivity (in minutes) that you want to elapse before your hard disks turn off when your computer is running on AC power.

The System stand by option enables you to specify the period of inactivity (in minutes) that you want to elapse before your computer goes on Stand by when your computer is running on AC power. Power is reactivated when you click the left mouse button or press spacebar on the keyboard.

The System hibernates option enables you to specify the period of inactivity (in minutes) before your computer goes into the hibernate state. Power is reactivated when you push the power button.

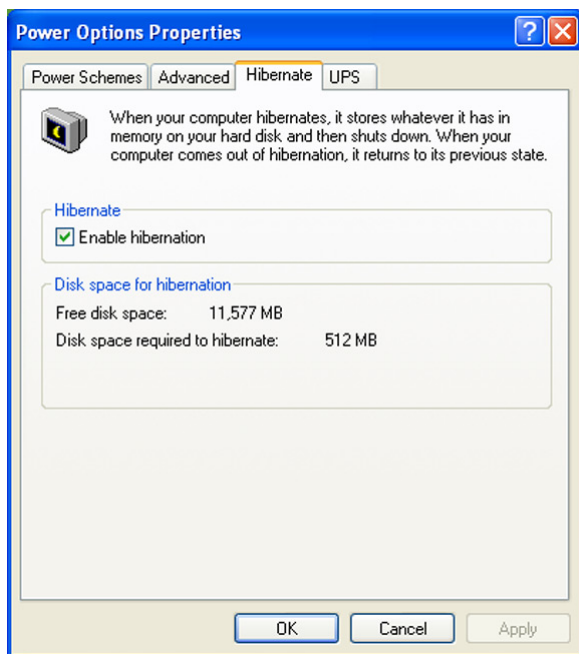
- 3 To save a new power scheme, first modify the settings, click **Save As**, type a descriptive name, and then click **OK**.

- 4 Click the **Advanced** tab.



- 5 Select the desired settings.

- 6 Click the **Hibernate** tab.

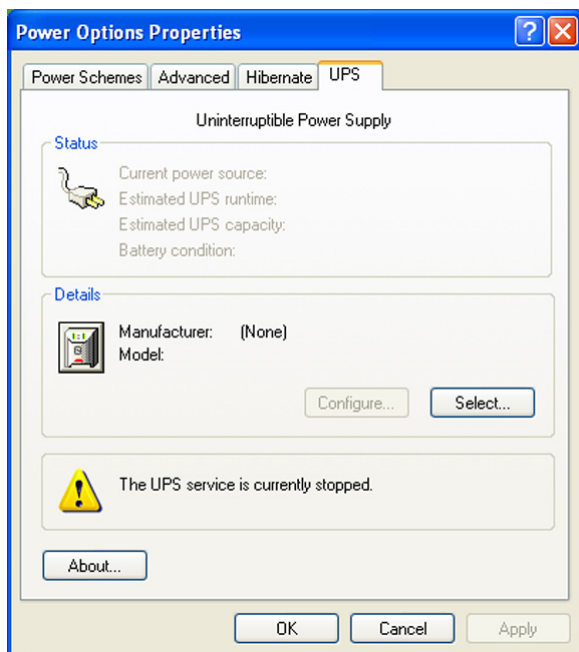


- 7 Select the settings most appropriate for your system.

8 Click the **UPS** tab.

The UPS tab enables you to select and configure an Uninterruptible Power Supply (UPS) device for your system.

 A UPS device is an optional accessory not supplied with your system.



9 Select the settings most appropriate for your system and click **OK**. For more information about configuring a UPS device, refer to the Microsoft® Windows® XP operating system Help.

Chapter 3

Upgrading and Maintaining Components

This chapter describes upgrade and maintenance procedures.

System configuration may vary, depending on the model purchased. Your computer may not include all of the hardware features shown in the illustrations of this section.

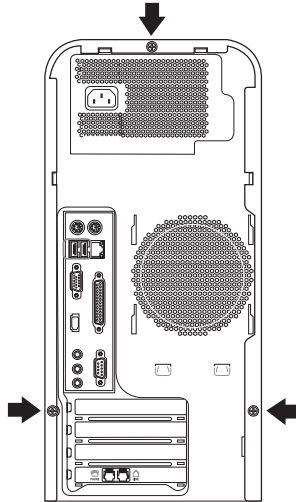
! Before opening the system unit, save and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.

Removing the Cover

Removing the cover

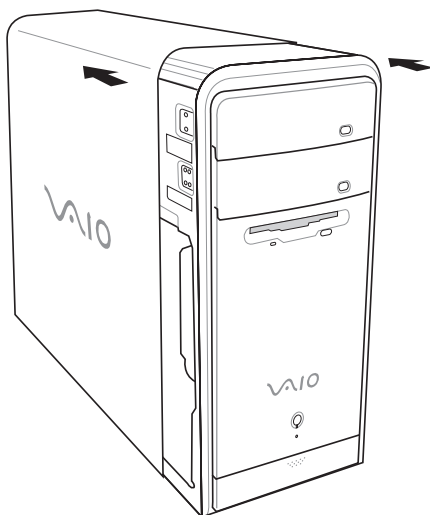
- 1 Shut down your computer and turn off all peripheral devices, such as your printer.
- 2 Unplug your computer and disconnect any peripheral devices.
- 3 Position the system unit so that the back panel is facing towards you.
- 4 Unscrew the three cover release screws located on the edges of the back panel and set aside.

Removing the release screws



- 5 When the screws are removed, the cover is released. Slide the cover towards the back of the unit to remove it.

Removing the cover

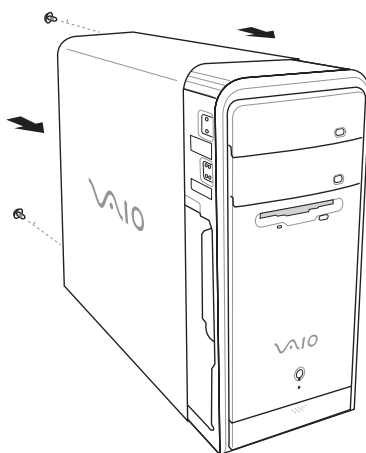


! If you remove the cover immediately after you shut down your computer, the components may be too hot to touch. Wait until the internal parts of the system unit cool down before you attempt to remove the cover.

Replacing the cover

- 1 Carefully align the cover to the chassis frame. The cover should align evenly against the chassis.
- 2 Slide the cover firmly onto the unit, sliding it forward until the cover snaps into place.
- 3 Replace the release screws.

Replacing the cover



Installing an Add-on Card

Your computer may have one or more open expansion slots, depending on the model configuration. An expansion slot enables you to install add-on cards to expand the functionality of your system. The length of the add-on card should not exceed 9.05 inches.

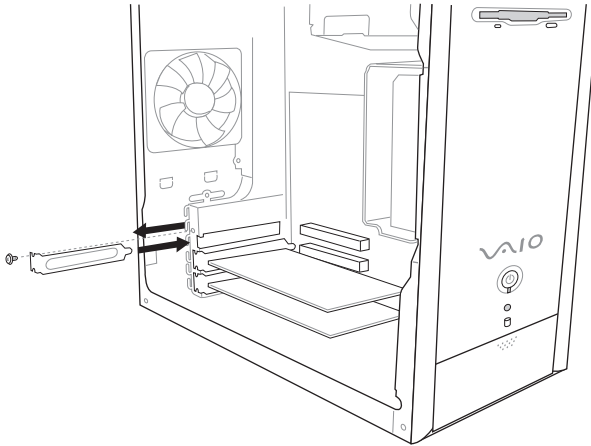
 Add-on card configuration varies by model. Some models, such as Configure-to-Order (CTO) systems, may contain preinstalled add-on cards.

! Observe the proper safety precautions when you add cards to your Sony computer.

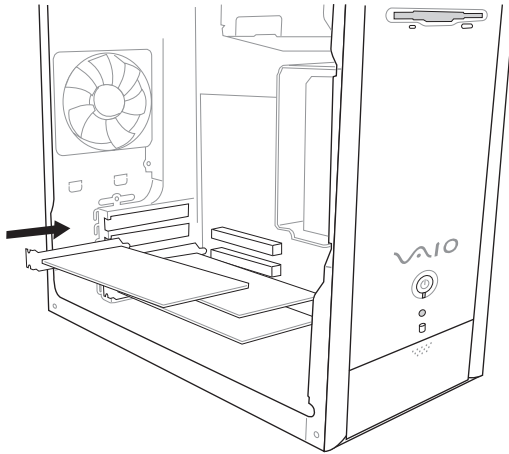
Installing an add-on card

- 1 Shut down your computer and turn off all peripheral devices, such as your printer.
- 2 Unplug your computer and any peripheral devices.
- 3 Remove the cover. See [“Removing the cover”](#).
- 4 Locate an available expansion slot. Remove the slot cover’s screw, and then remove the slot cover.

! When removing a slot cover, be careful not to damage components on the system board or add-on cards. You may need to temporarily remove add-on cards or other components that may be next to the slot cover you want to remove.

Removing/Installing the slot cover

- 5 Install the add-on card by inserting it into the expansion slot and securing it with the screw from the expansion slot cover.

Installing an add-on card

- 6 Attach any internal cables that the card requires. See the instructions supplied with the add-on card.
- 7 Replace the cover. See [“Replacing the cover”](#)
- 8 Reconnect the power cord and all peripheral devices.
- 9 Turn on the computer.

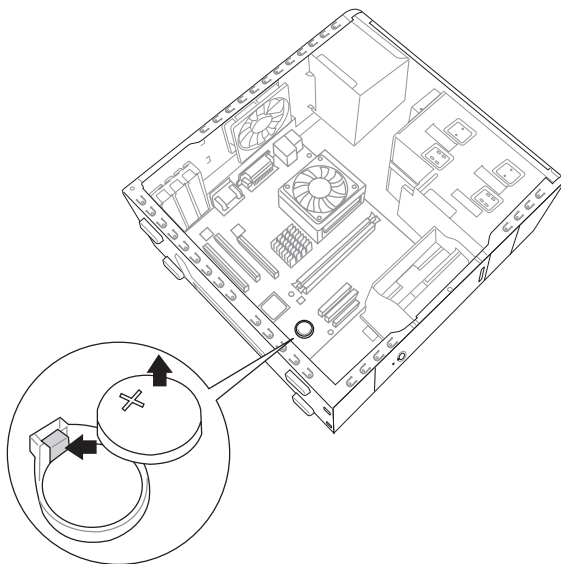
About the Lithium Battery

The lithium battery starts to weaken after several years and the system settings, such as the date and time stored in CMOS RAM, may become inaccurate. Replace the lithium battery when this occurs.

! There is danger of the battery exploding if it is replaced incorrectly. Replace the battery only with a CR2032-type lithium battery.

Replacing the lithium battery

- 1 Write down any changes you may have made to the settings in the BIOS Setup utility.
- 2 Shut down your computer and turn off all peripheral devices, such as your printer.
- 3 Unplug your computer and any peripheral devices.
- 4 Remove the cover. See [“Removing the cover”](#).
- 5 If necessary, remove any cables, add-on cards, or other components to access the lithium battery.
- 6 Remove the old battery and install the new battery with the plus (+) side up.

Installing a lithium battery**7** Replace the cover. See “Replacing the cover”.

The values stored in the CMOS memory are now reset to the factory default values. Run the Setup utility to reset the date, time, passwords, and other changes you may have made to the BIOS settings. If you do not wish to customize your BIOS settings, do not run the Setup utility.

! Dispose of the lithium battery properly. In some areas, the disposal of lithium batteries in household or business trash may be prohibited. You can return your unwanted lithium batteries to your nearest Sony Service Center or Factory Service Center. To locate a Service Center near you, visit the Sony Computing Support Web site at <http://www.sony.com/pcsupport>.

About Installing Memory

The amount of preinstalled memory may vary, depending on the system configuration you purchased. Your computer may ship with all available memory slots filled. See the online specifications sheet for details about the amount of memory installed in your computer. For memory replacement or upgrades, use only 2.5 V, 64-bit, PC2100 DDR-SDRAM Dual InLine Memory Modules (DIMM).



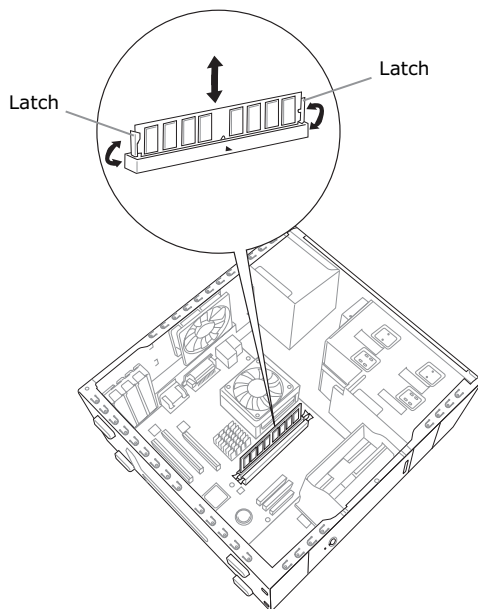
You can purchase additional memory modules, accessories, and peripheral equipment from your local retailer.

! Observe the proper safety precautions when you add or remove the memory in your computer.

Removing a memory module

- 1 Shut down your computer and turn off all peripheral devices, such as your printer.
- 2 Unplug your computer and any peripheral devices.
- 3 Remove the cover. See [“Removing the cover”](#).
- 4 Gently place the unit on its side. If necessary, remove any cables, add-on cards, or other components to access the memory module slots.
- 5 Locate the memory module(s) you wish to remove.
- 6 Push down on the latches, located on both sides of the module, to gently eject it from the slot.
- 7 Grasp one edge of the module and lift it out. Store the module in a static-free bag.

Removing/Installing memory



Installing a memory module

- 1 Shut down your computer and turn off all peripheral devices, such as your printer.
- 2 Unplug your computer and any peripheral devices.
- 3 Remove the cover. See [“Removing the cover”](#).
- 4 Gently place the unit on its side. If necessary, remove any cables, add-on cards, or other components to access the memory module slots.
- 5 Remove the memory module from its anti-static package, handling it by the edges.
- 6 Locate the notch on the bottom edge of the module to align it over the open memory slot.
- 7 Firmly insert the bottom edge of the memory module into the slot.

- 8 Press down evenly against the module's upper corners. The latches snap into position, holding the module in place.

! To avoid damaging a memory module slot, move the end latches slightly outward to relieve pressure. The module clicks into place.

- 9 Reinstall any components or add-on cards you may have removed.
- 10 Replace the cover. See [“Replacing the cover”](#).

Installing Memory Modules

Your system supports PC2100 DDR-SDRAM DIMM memory modules. The DDR-SDRAM DIMM memory modules can be single- or double-sided and installed in either socket.

! Before opening the system unit, save and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.

- 1 Choose the size of the memory module and configuration as shown in the following table. Memory modules can vary in size and speed between sockets. The minimum memory size is 128 MB. The maximum memory size is 1.0 GB. The BIOS automatically detects the type, size and speed of the memory modules.

Memory module configurations (MB)*

<i>DIMM1</i>	<i>DIMM2</i>
0, 128, 256, 512	0, 128, 256, 512

* Your computer ships with at least 512 MB of memory and is expandable to 1.0 GB. Your model may ship with more than 512 MB DDR-SDRAM depending on the configuration you purchased.

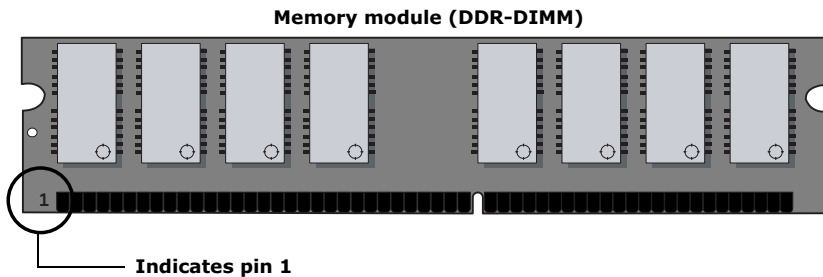
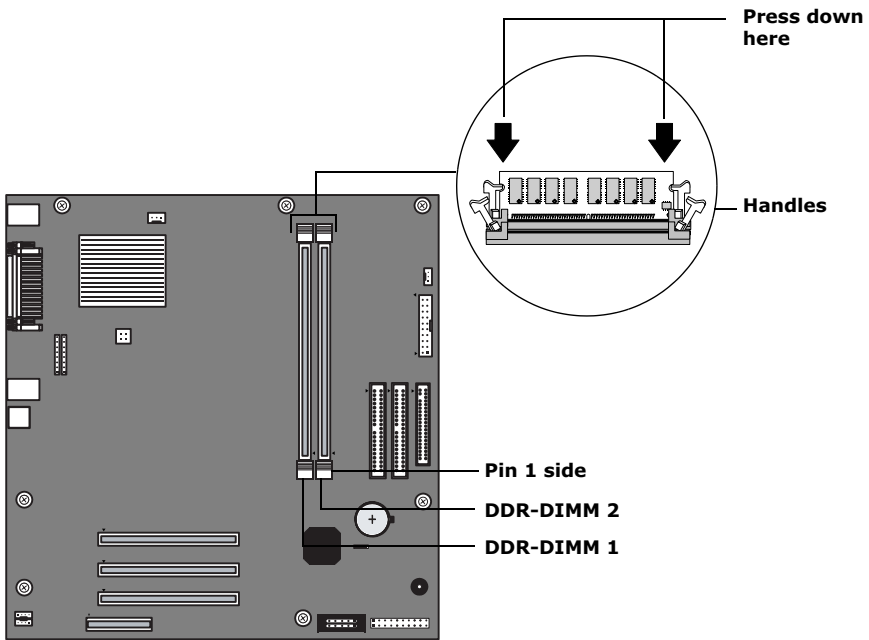
 Use only PC2100 memory. Your system does not support EDO, buffered DDR-SDRAM, or PC100/133 SDRAM memory.

- 2 Remove the side panel (see “[Removing the cover](#)” on page 24).
- 3 Remove the power supply (see “[Removing the Power Supply](#)” on page 44).
- 4 If necessary, remove the memory module you wish to replace (see “[Removing a memory module](#)” on page 32).

! Touch any exposed metal portion of the chassis to discharge static electricity in your body before handling a memory module.

- 5 If necessary, remove any previously installed PCI cards.
- 6 Remove the new memory module(s) from its anti-static package. Hold the memory module only by its edges to prevent static-electricity damage.

- 7 Align the module over the appropriate slot, noting the location of pin 1 on the module and pin 1 on the slot.



- 8 Carefully but firmly insert the edge of the module into the slot.

- 9 Press down firmly and evenly at both corners until the module is fully seated.

 When the module is fully seated, the handles on each side are straight up and locked into the slot on each side of the module. If the handles are not totally straight upright, continue to press down on each side of the module until the handles lock into place.

- 10 Replace the power supply (see “[Replacing the Power Supply](#)” on page 45).
- 11 Replace the cover (see “[Replacing the cover](#)” on page 25).
- 12 Reconnect the power cord and turn on the computer.

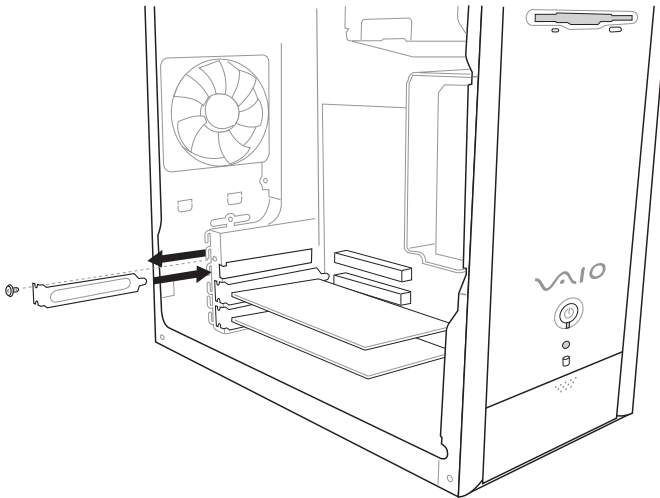
After restarting your computer, the system recognizes the additional memory and automatically make the proper configurations.

Covering an Open I/O Slot

Slot covers prevent air from escaping through the empty slot. If air escapes, the components inside the computer cannot be properly cooled. This may damage some components, especially the main processor, which generates the most heat.

! Before opening the system unit, save and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.

- 1 Slide the tip of the slot cover between the chassis and system board.



- 2 Push the slot cover down until it rests firmly on the lip in the chassis. All add-on card brackets and slot covers rest on this lip.
- 3 Replace the slot cover's screw to secure the I/O slot cover.

About Hard Disk Drive Installation

Your computer comes with an available internal bay to hold a second standard 3.5-inch hard disk drive. Some models, such as Configure-to-Order (CTO) systems, may already have a second hard disk drive installed. Your system can support ATA-33, ATA-66, or ATA-100 hard disk drives. Sony recommends using an ATA-100 hard disk drive to take full advantage of your system's features.

 The hard disk drive access indicator is lit when either internal hard disk drive is active.

! Make sure you observe the proper safety precautions when you upgrade your Sony computer.

Replacing the original hard disk drive

If you replace the original, factory-installed hard disk drive, your system cannot restore the drive partitions, operating system, or original software, using the preinstalled Hard Drive Recovery utility.

The Hard Drive Recovery utility is a quick and easy-to-use program that can restore your system if it becomes unstable or stops working properly.

To enable you to recover your system with the VAIO Recovery utility, you can purchase a Partition Recovery CD Assembly (Partition Recovery ASSY) to restore your system.

Follow these steps to order the Partition Recovery CD Assembly:

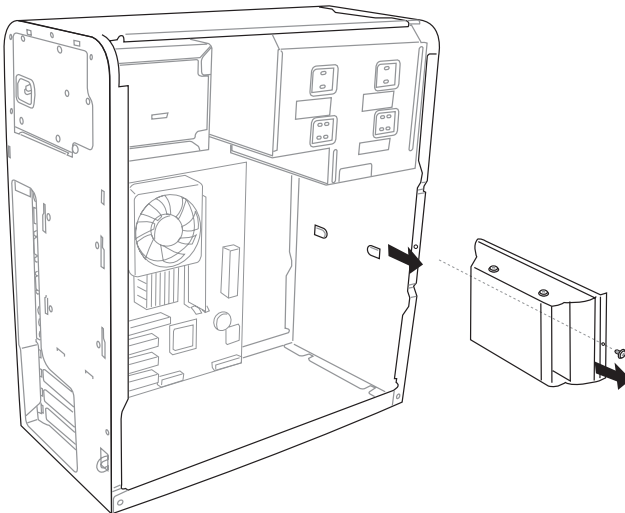
- 1 Connect to the Internet.
- 2 Go to the Sony Direct Accessories and Parts Center Web site at <http://servicesales.sel.sony.com>.
- 3 In the section, Search by Model for Accessories, type in your computer model and click **List Parts and accessories**.
- 4 From the list of accessories, locate the Partition Recovery ASSY and click the option, **Add to Cart**.
- 5 Click **Continue to Check Out**, and follow the on-screen instructions to complete your purchase.

 If you are not able to access the Sony Direct Accessories and Parts Center Web site, contact a customer service representative at 1-800-488-7669.

Installing an additional hard disk drive

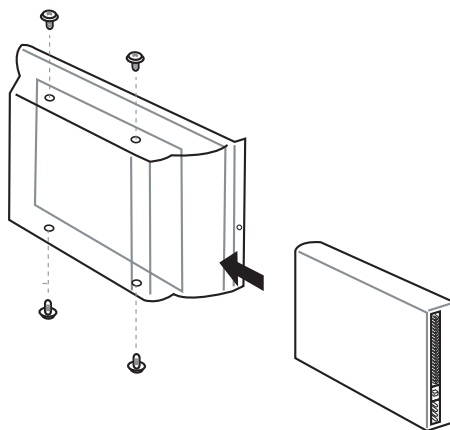
- 1 Shut down your computer and turn off all peripheral devices, such as your printer.
- 2 Unplug your computer and any peripheral devices.
- 3 Remove the cover. See [“Removing the cover”](#).
- 4 Configure the jumpers on the new drive as a slave. See the configuration instructions supplied with your drive.
- 5 Detach the power and drive cables from the original hard disk drive that is preinstalled in your computer.
- 6 Release the drive holder from the chassis by removing the drive holder screw.
- 7 Slide the drive holder out.

Removing the drive holder



- 8 Slide the new drive into the drive holder and align the holes on each side of the drive to the holes in the Drive holder.
- 9 Secure the drive to the drive holder with screws, through the holes on each side of the drive holder.

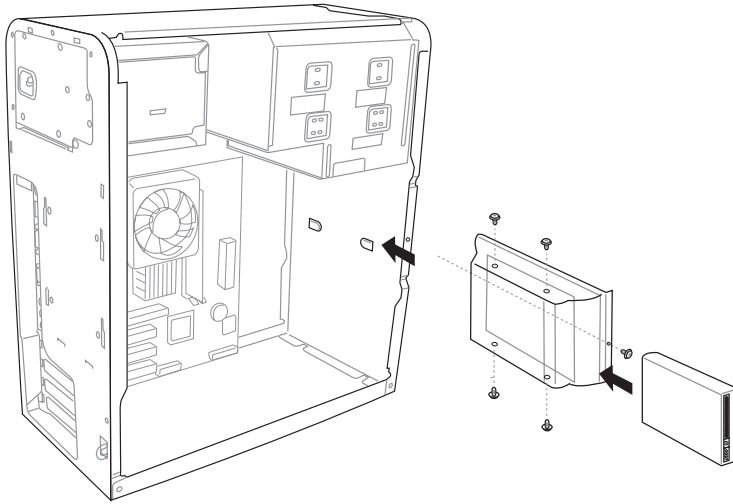
Attaching the drive screws



 Your new hard disk drive is supplied with the necessary screws. Do not overtighten these screws when securing the new drive to the drive holder.

- 10 Realign the drive holder with the tracks on the inside of the chassis and slide the drive holder in completely.
- 11 Reinsert the drive holder screw and tighten to lock the drive holder back into position.
- 12 Connect the second drive connector to the new drive. Orient the connector to align pin 1 on the red side of the ribbon cable with pin 1 on the new drive.
- 13 Connect the second power connector to the new drive, following the instructions supplied with the drive.

Replacing the drive holder



14 Replace the cover. See [“Replacing the cover”](#).

15 Reconnect the power cord to your computer.

Identifying the additional hard disk space

When you initialize the new hard disk, it must be configured as an extended partition in Windows NT file system (NTFS) format.

- 1 Log on to Windows® as Administrator.
- 2 Click **Start** in the Windows taskbar, then right-click **My Computer**. A shortcut menu appears.
- 3 Select **Manage**. The Computer Management window appears.
- 4 Under the file directory, go to **Storage** and then select **Disk Management**.
- 5 Right-click on the newly installed, unformatted hard disk (Disk label identified with red marking). From the shortcut menu, select **Initialize Disk**.

- 6 Click on the Unallocated area of the disk and then right-click to display a shortcut menu.
- 7 Select **New Partition**. The New Partition wizard appears.
- 8 Follow the wizard's on-screen instructions to complete the process.

The Windows® XP operating system recognizes the new hard disk drive and applies the NTFS format.

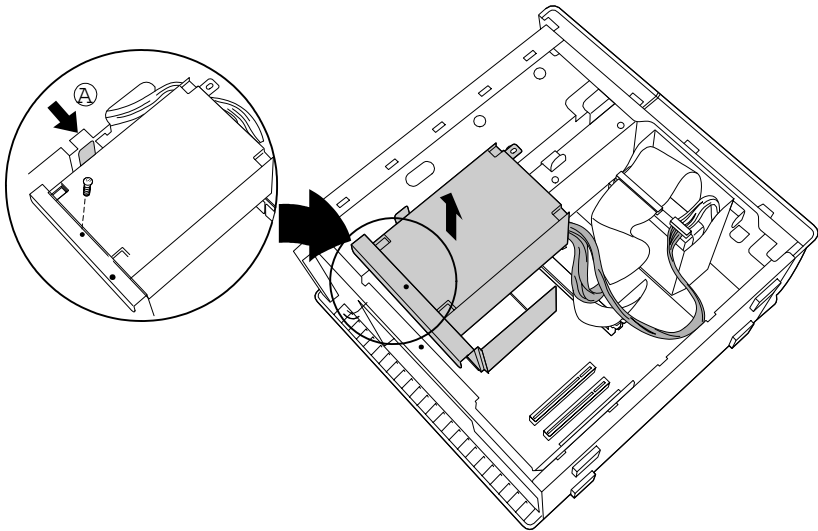
Removing the Power Supply

Remove the power supply when you insert a memory module (see “Installing Memory Modules” on page 35).

! Before opening the system unit, save and close all open files, exit all open applications, turn off the power to all attached peripheral devices, shut down the computer, and unplug the power cord.

- 1 Remove the screw that secures the power supply to the rear of the chassis.
- 2 Pull the tab (A) that latches the power supply to the chassis.
- 3 Slide the power supply up until the power supply clears the chassis.

Removing the power supply



- 4 Rotate the power supply upside down and rest it on top of the chassis where the hard drive is located.

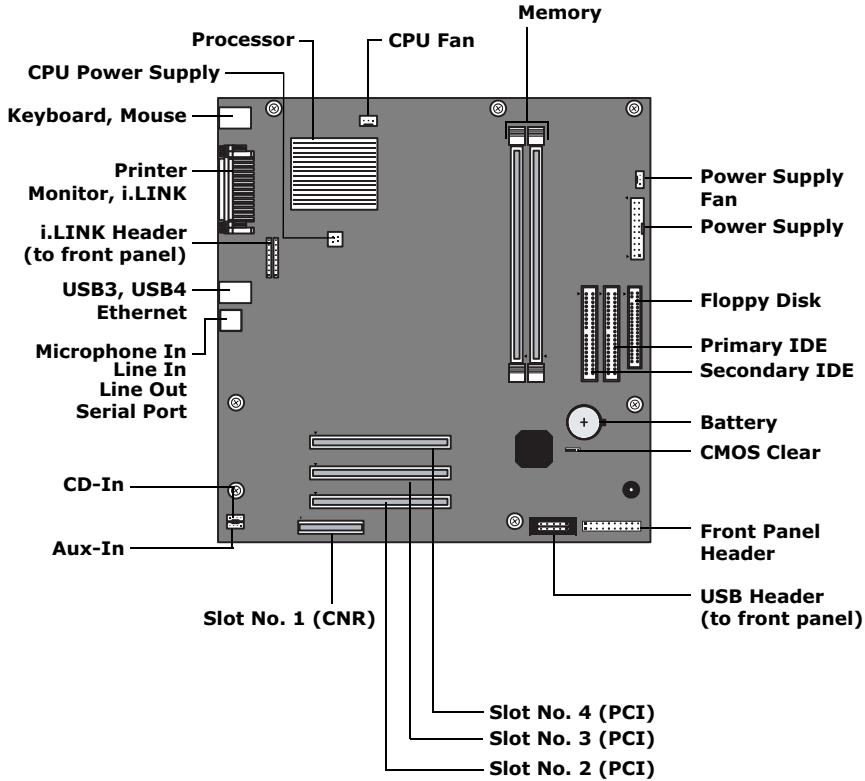
Replacing the Power Supply

- 1 Rotate the power supply down and slide it into the chassis along the rails to each side of the chassis until the tab snaps into position.
- 2 Replace the screw that secures the power supply to the rear of the chassis.

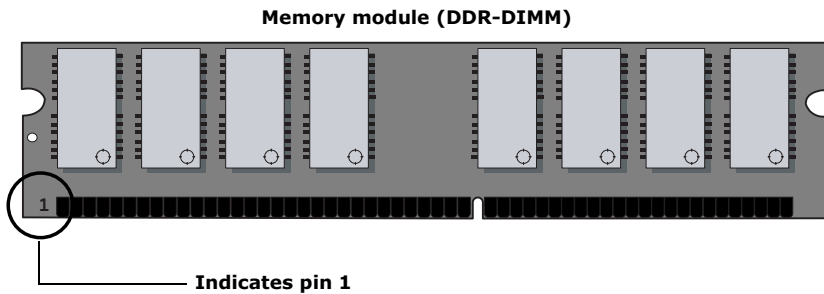
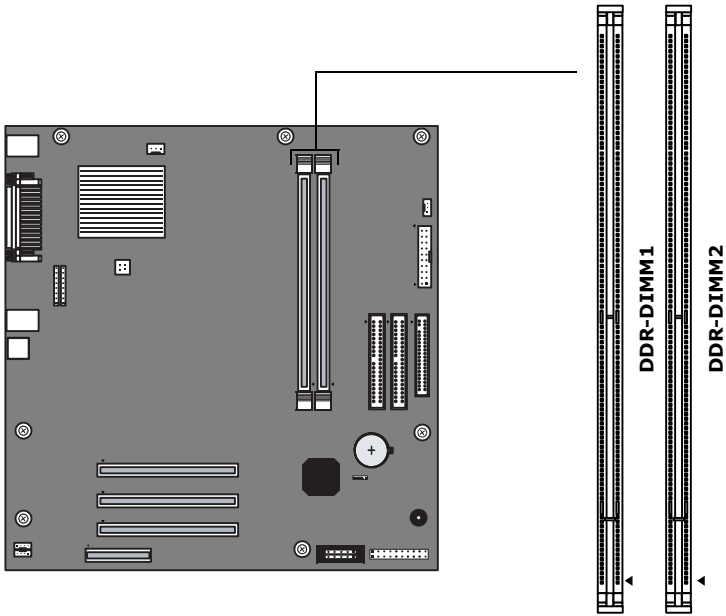
Chapter 4

System Board

This chapter identifies and describes components on the system board.



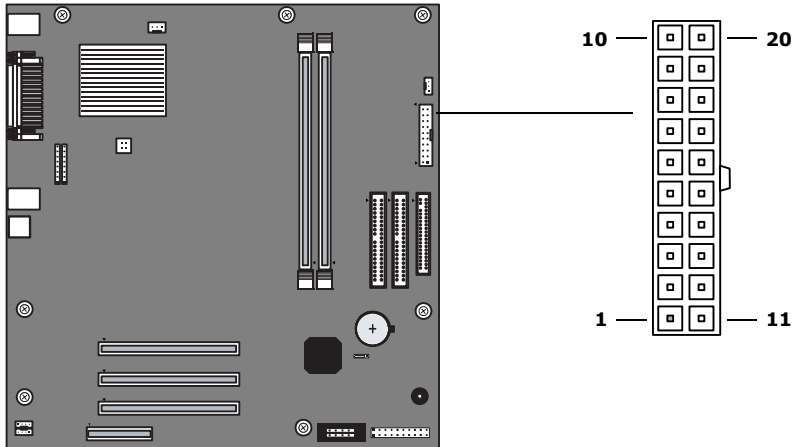
Memory Module (DDR-DIMM) Slots



Align pin 1 of the Dual Inline Memory Module DDR-SDRAM DIMM to the small triangle located on the memory module slot of the system board.

Power Supply Header

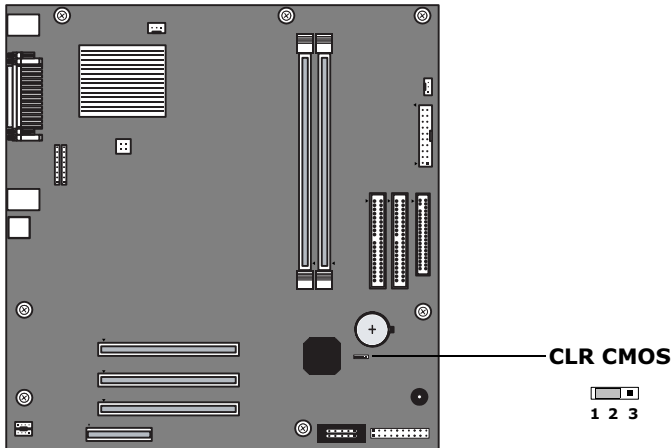
The power supply header on the system board connects to the power supply connector labelled P1.



CLR CMOS Jumper

There is one user-configurable jumper for CMOS Clear.

The computer ships with CMOS Clear in the Normal position. Do not change the position of this jumper unless directed by a technical support person.



CLR CMOS Jumper Settings

<i>Jumper Plug Position</i>	<i>Function</i>
1-2	Clear CMOS Password
2-3	Normal



The configuration jumpers should never need changing unless otherwise directed by a technical support or service technician.

Chapter 5

CMOS Setup Options

This chapter describes each screen in the Award BIOS Setup Utility (see “[Accessing the BIOS Setup Utility](#)” on page 16).

The Award BIOS setup has five menu items on the menu bar. These are:

- ❑ Main
- ❑ Advanced
- ❑ Power
- ❑ Boot
- ❑ Exit

Options that you can change are enclosed in brackets. Text that is not enclosed in brackets cannot be changed.

A small triangle (▸) indicates that there is a sub-menu with additional information and options. Press Enter to display the sub-menu. The information and options in a sub-menu are context-sensitive (they appear or disappear, depending on which options you select).

The item shown in [brackets] in this guide is the default option. The option shown in [brackets] on the screen is the option currently set for your system.

The other available options for each item are shown without brackets directly below the default option in this guide. The available options are listed in the order they occur when you press the + key.

Use the left and right arrow keys to choose a menu item. Use the up and down arrow keys to select an option. Press Enter to display a list of options, or press the + or - key to cycle through the other options.

If you display the list of options, use the up and down arrow keys to select an option in the list, then press Enter to choose the selection.

Press Esc to go back to the main menu.

Press F10 to save the changes and exit, or press Esc to discard the changes.

Follow the on-screen prompts for other choices. The bottom of the screen presents a summary of the keys to use for navigation and control.

Main Screen

System Time	[00:00:00]
System Date	[01/01/2003]
▸Primary Master	(see “IDE Sub-Menus” on page 54)
▸Primary Slave	(see “IDE Sub-Menus” on page 54)
▸Secondary Master	(see “IDE Sub-Menus” on page 54)
▸Secondary Slave	(see “IDE Sub-Menus” on page 54)
Supervisor Password	[Disabled]
User Password	[Disabled]
Installed Memory	See online specifications sheet for details.
BIOS Revision	1001

►IDE Sub-Menus

Type	[Auto] User Type HDD CD-ROM LS-120 MO Other ATAPI Device None
Translation Method [*]	[LBA] Large Normal Match Partition Table Manual
Cylinders [†]	[1024]
Heads [†]	[255]
Sectors [‡]	[63]
CHS Capacity [*]	8422 MB
Maximum LBA Capacity [*]	30735 MB
Multi-Sector Transfers [*]	[Maximum] Disabled 2 Sectors 4 Sectors 8 Sectors 16 Sectors 32 Sectors
SMART Monitoring [*]	[Disabled] Enabled
PIO Mode ^{**}	[4]
ULTRA DMA Mode [†]	[5]
Set Device As ^{††}	[Auto] Floppy Hard Disk

* This option appears when Type is set to User Type HDD. Actual capacity depends on product.

† This option appears when Type is set to Auto or User Type HDD.

‡ This option appears when Type is set to Auto or User Type HDD.

** This option appears when Type is not set to None.

†† This option appears when Type is set to MO.

Advanced Screen

CPU Speed

See online specifications sheet for details.

► I/O Device Configuration

Onboard AC97 Audio Controller	[Enabled] Disabled
Onboard AC97 Modem Controller	[Auto] Disabled
Onboard 1394 Controller	[Enabled] Disabled
Onboard LAN Controller	[Enabled] Disabled
Onboard Serial Port 1	[3F8H / IRQ 4] 2F8H / IRQ 3 3E8H / IRQ 4 2E8H / IRQ 10 Disabled
Onboard USB 2.0 Controller	[Enabled] Disabled
Onboard Parallel Port	[378H/IRQ7] 278H/IRQ5 Disabled 3BCH/IRQ7
Parallel Port Mode	[ECP] Normal EPP ECP + EPP
ECP DMA Select	[3/1]

► PCI Configuration

Slot 1 IRQ to Slot 3 IRQ	[Auto] NA 3 4 5 7 9 10 11 12 14 15
Onboard LAN Boot ROM	[Disabled] Enabled

Power Screen

▶Power Up Control

AC Power Loss Restart	[Disabled] Enabled
-----------------------	-----------------------

Wake/Power Up On External Modem	[Disabled] Enabled
---------------------------------	-----------------------

Wake on LAN	[Disable] Enabled
-------------	----------------------

▶Hardware Monitor

CPU Temperature	[(displays actual temperature)] Ignore
-----------------	---

Boot Screen

- | | |
|----------------------|--|
| 1. ATAPI CD-ROM | [(displays installed drive)]
Disabled |
| 2. Removable Device | [Legacy Floppy]
LS120
ZIP
ATAPI MO
USB FDD
Disabled |
| 3. IDE Hard Drive | [(displays installed drive)]
Disabled |
| 4. Other Boot Device | Disabled
[INT18 Device (Network)]
SCSI Boot Device |
| Silent Boot | [Enabled]
Disabled |

Exit Screen

Exit Saving Changes

Exit Discarding Changes

Load Setup Defaults

Discard Changes

Save Changes

Chapter 6

Miscellaneous Technical Information

This chapter contains information on the following subjects:

- ❑ User and Supervisor password
- ❑ Beep code error messages
- ❑ PCI configuration status and error messages
- ❑ DMA channel assignments
- ❑ System I/O address map
- ❑ Memory map
- ❑ IRQ settings

User and Supervisor Passwords

The system allows you to specify up to two passwords (a User password and a Supervisor password) in the CMOS Setup Utility. The User password is required; the Supervisor password is optional.

Access to the CMOS Setup Utility depends on which passwords were previously set, as indicated next.

<i>If you set these passwords...</i>	<i>...the following passwords are required:</i>
User password only	User password is required at bootup.
Supervisor password only	No password is required at bootup. Supervisor password is required by most setup options.
Both passwords	User password is required at bootup. Supervisor password is required by most setup options.

Beep Code Error Messages

During a normal bootup, a single short beep signifies that the system is OK. Other beep patterns signify errors. The number of beeps indicates the specific error that occurred.

If a system error occurs, the Sony Online Support technicians require the number of beeps your system produces.

PCI Configuration Status and Error Messages

The following is a list of status and error messages that may appear on your system from time to time.

<i>Message</i>	<i>Meaning</i>
Floppy Disk Controller Resource Conflict	The floppy disk controller has requested a resource that is already in use.
CMOS Checksum Error, CMOS Cleared	The CMOS data was reinitialized due to a CMOS checksum error.
CMOS Data Invalid, CMOS Cleared	Invalid entry in the CMOS.
Parallel Port Resource Conflict	The parallel port has requested a resource that is already in use.
PCI Error Log is Full	This message is displayed when more than 15 PCI conflict errors are detected. No additional PCI errors can be logged.
PCI I/O Port Conflict	Two devices requested the same resource, resulting in a conflict.
PCI IRQ Conflict	Two devices requested the same resource, resulting in a conflict.
PCI Memory Conflict	Two devices requested the same resource, resulting in a conflict.
Primary Boot Device Not Found	The designated primary boot device (hard disk drive, floppy disk drive, CD-ROM drive, or network drive) could not be found.
Primary IDE Controller Resource Conflict	The primary IDE controller has requested a resource that is already in use.
Primary Input Device Not Found	The designated primary input device (keyboard, mouse, or other, if input is redirected) could not be found.
Primary Output Device Not Found	The designated primary output device (display, serial port, or other, if input is redirected) could not be found.
Secondary IDE Controller Resource Conflict	The secondary IDE controller has requested a resource that is already in use.
Static Device Resource Conflict	A device has requested a resource that is already in use.
System Board Device Resource Conflict	A device has requested a resource that is already in use.

DMA Channel Assignments

This shows the factory default values. The Windows® operating system reassigns resources to best meet the needs of a particular configuration.

<i>Resource</i>	<i>Device</i>
-----------------	---------------

Channel 2	Standard floppy disk controller
-----------	---------------------------------

Channel 3	ECP Printer Port (LPT1)
-----------	-------------------------

Channel 4	Direct memory access controller
-----------	---------------------------------

System I/O Address Map

<i>Resource</i>	<i>Device</i>
0x00000000-0x00000CF7	PCI bus
0x00000000-0x00000CF7	Direct memory access controller
0x00000010-0x0000001F	Motherboard resources
0x00000020-0x00000021	Programmable interrupt controller
0x00000022-0x0000002D	Motherboard resources
0x0000002E-0x0000002F	Motherboard resources
0x00000030-0x0000003F	Motherboard resources
0x00000040-0x00000043	System timer
0x00000044-0x0000005F	Motherboard resources
0x00000060-0x00000060	Standard 101/102-Key or Microsoft® Natural PS/2® Keyboard
0x00000061-0x00000061	System speaker
0x00000062-0x00000063	Motherboard resources
0x00000064-0x00000064	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
0x00000065-0x0000006F	Motherboard resources
0x00000070-0x00000073	System CMOS/real time clock
0x00000074-0x0000007F	Motherboard resources
0x00000080-0x00000090	Direct memory access controller
0x00000091-0x00000093	Motherboard resources
0x00000094-0x0000009F	Direct memory access controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A2-0x000000BF	Motherboard resources
0x000000C0-0x000000DF	Direct memory access controller
0x000000E0-0x000000EF	Motherboard resources
0x000000F0-0x000000FF	Numeric data processor
0x00000170-0x00000177	Secondary IDE Channel
0x000001F0-0x000001F7	Primary IDE Channel
0x00000274-0x00000277	ISAPNP Read Data Port
0x00000279-0x00000279	ISAPNP Read Data Port
0x00000376-0x00000376	Secondary IDE Channel
0x00000378-0x0000037F	ECP Printer Port (LPT1)
0x000003B0-0x000003BB	Intel® 82845G Graphics Controller
0x000003C0-0x000003DF	Intel® 82845G Graphics Controller

<i>Resource</i>	<i>Device</i>
0x000003F2-0x000003F5	Standard floppy disk controller
0x000003F6-0x000003F6	Primary IDE Channel
0x000003F7-0x000003F7	Standard floppy disk controller
0x000003F8-0x000003FF	Communications Port (COM1)
0x000004D0-0x000004D1	Motherboard resources
0x000004D6-0x000004D6	Motherboard resources
0x00000778-0x0000077B	ECP Printer Port (LPT1)
0x00000A79-0x00000A79	ISAPNP Read Data Port
0x00000D00-0x0000FFFF	PCI bus
0x00008000-0x0000807F	Agere Systems™ AC'97 Modem
0x00008400-0x000084FF	Agere Systems AC'97 Modem
0x00008800-0x0000883F	Realtek® AC'97 Audio
0x00009000-0x000090FF	Realtek AC'97 Audio
0x00009400-0x0000940F	Intel® 82801DB Ultra ATA Storage Controller-24CB
0x0000B800-0x0000B8FF	Realtek RTL8139/810x Family Fast Ethernet NIC
0x0000D000-0x0000D01F	Intel® 82801DB/DBM USB Universal Host Controller - 24C7
0x0000D400-0x0000D41F	Intel® 82801DB/DBM USB Universal Host Controller - 24C4
0x0000D800-0x0000D81F	Intel® 82801DB/DBM USB Universal Host Controller - 24C2
0x0000E400-0x0000E47F	Motherboard resources
0x0000E800-0x0000E81F	Motherboard resources
0x0000EC00-0x0000EC3F	Motherboard resources
0x0000EC80-0x0000EC8F	Motherboard resources
0x0000ECC0-0x0000ECCF	Motherboard resources
0x0000ECD0-0x0000ECDF	Motherboard resources
0x0000ECF0-0x0000ECFF	Motherboard resources

 I/O addresses that may be used by add-on cards are not listed.

Memory Map

<i>Resource</i>	<i>Device</i>
0x0000-0x9FFFF	System board
0xA0000-0xBFFFF	PCI bus
0xA0000-0xBFFFF	Intel® 82845G Graphics Controller
0xC8000-0xDFFFF	PCI bus
0xF0000-0xFFFFF	System board
0x100000-0x1F7FFFF	System board
0x1F80000-0xFEBFFFF	PCI bus
0xEC80000-0xEC800FF	Realtek® AC'97 Audio
0xED00000-0xED0001FF	Realtek AC'97 Audio
0xED80000-0xED8003FF	Intel® 82801DB Ultra ATA Storage Controller-24CB
0xEE00000-0xEE000FFF	NEC OHCI Compliant IEEE 1394 Host Controller
0xEE80000-0xEE800FF	Realtek RTL8139/810x Family Fast Ethernet NIC
0xEF00000-0xEF0003FF	Intel® 82801DB/DBM USB 2.0 Enhanced Host Controller - 24CD
0xEF80000-0xEF87FFFF	Intel® 82845G Graphics Controller
0xF000000-0xF7FFFFF	Intel® 82845G Graphics Controller
0xFEC0000-0xFEC00FF	System board
0xFEE0000-0xFEE00FF	System board
0xFFB8000-0xFFBFFFF	Motherboard resources
0xFFF8000-0xFFFFFFF	Motherboard resources

IRQ Settings

<i>Resource</i>	<i>Device</i>
0	System timer
1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
4	Communications Port (COM1)
6	Standard floppy disk controller
8	System CMOS/real time clock
12	PS/2 Compatible Mouse
13	Numeric data processor
14	Primary IDE Channel
15	Secondary IDE Channel
16	Intel® 82845G Graphics Controller
16	Intel® 82801DB/DBM USB Universal Host Controller - 24C2
17	Realtek AC'97 Audio
17	Agere Systems AC'97 Modem
18	Intel® 82801DB/DBM USB Universal Host Controller - 24C7
18	NEC OHCI Compliant IEEE 1394 Host Controller
19	Intel® 82801DB/DBM USB Universal Host Controller - 24C4
21	Realtek RTL8139/810x Family Fast Ethernet NIC
22	Microsoft ACPI-Compliant System
23	Intel® 82801DB/DBM USB 2.0 Enhanced Host Controller - 24CD

Chapter 7

Specifications

This chapter describes the technical specifications for your computer.

Processor

See online specifications sheet for details.

Chipset

Intel® 845GV

PCI Bus

PCI Level 2.2, 33 MHz zero wait state

2 PCI slots open for expansion. (See online specifications sheet for details.)

Memory Modules

Installed memory	See online specifications sheet for details.
Maximum memory	1.0 GB (512 MB in each socket)
Voltage	2.5 V memory only
Pins	184-pins with gold-plated contacts
Memory type	2.5 V PC2100 DDR-SDRAM unrestricted, unbuffered, 64-bit (Non-ECC) DDR-SDRAM DIMM modules

Memory Configurations

<i>DIMM1</i> *	<i>DIMM2</i> *
0, 128, 256, 512	0, 128, 256, 512

* Your computer ships with at least 512 MB and is expandable to 1.0 GB. DDR-SDRAM DIMM memory modules must be 2.5 volts, PC2100, 4-clock between sockets and 64-bit or 42-bit 133 MHz SDRAM.

L2 Cache

Installed	512 KB
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Graphics

Chipset	See online specifications sheet for details.
Video memory	See online specifications sheet for details.
Resolution (displayed resolution depends on the video monitor you use)*	
True color (32-bits)	Up to 1400 x 1050 at 85 Hz non-interfaced
High color (16-bits)	Up to 1600 x 1200 at 100 Hz non-interfaced
256 colors (8-bits)	Up to 1400 x 1050 at 75 Hz non-interfaced

* The use of 1024 x 768 True color (32-bits) or High color (16-bits) at 75 Hz or lower refresh rate is recommended for video playback applications.

Audio

Sound chip	See online specifications sheet for details.
Wave synthesis	Software synthesis
Audio sampling rate	Up to 48 kHz at 16-bits
Rear panel connectors	Mic (for microphone) Headphones (for stereo headphones) Line In (from stereo audio source)

Communications

Modem [*]	V.90 compatible data/fax modem [†]
Fax	14.4 Kbps maximum
i.LINK® (IEEE 1394)	400 Mbps, OHCI chipset
Ethernet	10BASE-T/100BASE-TX

^{*} Installed modem may vary, depending on the system configuration purchased.

[†] This modem is capable of downloading at 56 Kbps. Your phone service, online service, or Internet Service Provider may not support this technology or operate at this speed.

I/O and Expansion Slots

Printer port	One high-speed bi-directional Centronics-compatible port with ECP and EPP modes
Modem jacks	Two RJ-11 jacks (telephone and line)
USB 2.0 ports*	USB1 and USB2 (on front panel) USB3 and USB4 (on rear panel) (See online specifications sheet for details.)
PCI slots	See online specifications sheet for details.
CNR slot	One slot for a CNR modem.
IDE headers	Primary and secondary (each supports two ATA-100 IDE drives)
i.LINK® (IEEE 1394) ports	One 4-pin port on front panel One 6-pin port on rear panel

* Universal Serial Bus (USB) 2.0 technology supports high/full/low speeds.

Floppy Disk Drive and Controller

<i>Drive</i>	<i>Description</i>
Floppy disk controller	82077-compatible (supports up to 2.88 MB)
Floppy disk drive	3.5-inch, 1.44 MB

Hard Drives and Controller

<i>Drive</i>	<i>Description</i>
EIDE controller	Supports up to four EIDE drives (supports PIO Mode 4 EIDE drives and Ultra DMA/100 Mode drives)
IDE hard drive*	See online specifications sheet for details.

* Bus-mastering EIDE driver installed.

Optical Drives

<i>Drive</i>	<i>Description</i>
Optical drive #1	See online specifications sheet for details.
Optical drive #2	See online specifications sheet for details.

System BIOS

Make and model	Award-based
ROM	2 Mb Flash-ROM
Passwords	User and supervisor passwords supported
Power management	APM 1.2
Advanced features	ACPI-1.0 compliant hardware for use with APM and PNP BIOS APIs
Plug and Play devices	Supported with steerable DMA channels and interrupts
Special features	Multi-boot, PCI add-on card auto-configure

Index

A

- address map, system 64
- audio specifications 71

B

- beep codes 61
- BIOS Setup Utility 30
- BIOS setup utility 16
 - advanced screen 55
 - boot screen 57
 - exit screen 58
 - main screen 53
 - options 51
 - power screen 56
 - screens 51
- BIOS specifications 73

C

- caution
 - lithium battery 30
- CMOS - See BIOS
- CMOS Clear configuration jumper 50
- CMOS RAM 30
- codes, beeps 61
- communications, specifications 71
- computer
 - add-on card installation 27
 - lithium battery ix
 - memory upgrade 32
 - removing unit cover 24
 - replacing lithium battery 30
- configuration jumper, CMOS Clear 50

- configuring

 - BIOS setup utility 16
 - power management 17

- connectors

 - i.LINK 6
 - USB 6

- covering I/O slot 38

- CPU - See processor

D

- display, power management 17
- disposal of lithium battery ix
- DMA channel assignments 63
- drive holder
 - reinstalling 39
 - removing 39

E

- Energy Star iii
- error messages
 - beep codes 61
 - PCI configuration 62
- expansion slots 14
 - specifications for 72
- expansion slots - See slots

F

- fax/modem - See communications
- front view 2
 - buttons and switches 4
 - connectors 5, 6
 - drives 3
 - indicators 5

G

- Giga Pocket
 - initialize additional hard disk drive 42
- graphics controller - See graphics
- graphics specifications 70

H

- hard disk drive
 - initializing additional hard disk space 42
 - installing an additional 39
- hardware
 - installing additional hard disk drive 39
- headphones connector 12

I

- i.LINK connector 6, 13
- I/O
 - address map 64
 - slot specifications 72
- I/O connectors
 - headphones 12
 - i.LINK 13
 - keyboard 10
 - line 12
 - line in 12
 - mic 12
 - monitor 11
 - mouse 10
 - printer 11
 - telephone 12
 - USB 10
- I/O slot covering 38
- icons, description of 8
- IEEE 1394 - See i.LINK
- installing
 - system memory 35
- IRQ settings 67

K

- keyboard connector 10

L

- L2 cache specifications 70
- line in connector 12
- lithium battery
 - caution 30
 - disposal ix
 - replacing 30
 - resetting date and time 32
 - safety precautions ix

M

- map - See I/O address map and memory map
- memory
 - installing 33
 - removing 32
 - upgrading 32
- memory - See system memory
- memory module
 - connector 48
 - specifications for 70
- messages
 - error 61
 - status and error 62
- mic connector 12
- microprocessor - See processor
- modem - See communications
- monitor - See display
- monitor connector 11
- mouse connector 10

N

- NTFS file format 42

O

- online specifications 1
- Optical drive
 - location of 3
 - performance of discs 3, 73

P

- passwords, user and supervisor 60
- PCI Add-on Card
 - inserting 27
- power management, configuring 17
- printer connector 11

R

RAM - See system memory

rear view 7

 I/O connectors 10

 icons 8

removing unit cover 24

Replacing the cover 25

resetting date and time 32

resolution - See graphics

S

setup, BIOS 16

slot - See I/O slot

specifications

 audio 71

 BIOS 73

 chipset 69

 communications 71

 DIMM configurations 70

 floppy disk drive and controller 72

 graphics 70

 hard drives and controllers 72

 I/O and expansion slots 72

 L2 cache 70

 memory module 70

 optical drives 73

 PCI bus 69

 processor 69

 system BIOS 73

status and error messages 62

supervisor password 60

system board

 configuration jumper 50

 memory module connector 48

system I/O address map 64

system memory, installing 35

T

telephone connector 12

U

USB connectors 6, 10

user password 60

